

### **REMARKS**

Claims 1-14 are pending in the application. By this Amendment, Claims 1, 6 and 11 are amended. Favorable reconsideration is respectfully requested in light of the following Remarks.

Entry of this Amendment is proper under 37 CFR §1.116 because this Amendment: (a) places the application in condition for allowance (for the reasons discussed herein); (b) does not raise any new issue requiring further search and/or consideration because the amendments amplify issues previously discussed throughout prosecution; (c) does not add claims without deleting an appropriate number of claims; and (d) places the application in better form for appeal, should be appeal be necessary. This Amendment is necessary and was not earlier presented because it is made in response to arguments raised in the final rejection. Entry of this Amendment is thus respectfully requested.

#### **1. The Claims Satisfy the Requirements of 35 USC 112, First Paragraph**

The Office action rejects Claims 1, 6 and 11 under 35 U.S.C. §103, first paragraph asserting that the feature of the controller being configured to vary the output current based on a maximum instantaneous current rating of the inverter is not disclosed in the specification. By this Amendment, this feature is removed from Claims 1, 6 and 11 to expedite prosecution of the present application. Withdrawal of the rejection is respectfully requested.

#### **2. The Claims Define Patentable Subject Matter**

1. The Office action rejects Claims 1, 2, 6, 7 and 11-14 under 35 U.S.C. §103(a) over Steigerwald (U.S. Patent No. 4,424,557, hereinafter “Steigerwald”) in view of Suelzle et al. (U.S. Patent No. 5,397,927, hereinafter “Suelzle”). The rejection is respectfully traversed.

By this Amendment, Claims 1, 6 and 11 are amended to include the feature of a third circuit for combining the load harmonic current and the fundamental sinusoidal

current reference to generate a command output signal, wherein the controller is configured to generate an error signal based on a difference between the command output signal and the output current, and wherein the controller is configured to process the error signal and to generate a switching signal for actuating a switching gate of said inverter to compensate for the load harmonic current when said inverter injects the output current to the mains grid supply voltage. Support for this feature can be found in Paragraph [0017] and Figure 2.

Steigerwald discloses a full bridge PWM inverter 1 and a control 25 that provide switching signals to the transistors 2, 5, 7, 9 of the inverter 1. A phase locked loop 27 generates a sinusoidal waveform at the input of variable gain amplifier 29. The magnitude of the reference waveform is adjusted by a current magnitude command in the variable gain amplifier 29. *See Figs. 1 and 2; col. 2, lines 45-51; col. 3, lines 20-31.* A comparator 31 operates with hysteresis and compares the magnitude adjusted output waveform of the variable gain amplifier 29 to the actual output current of the inverter 1. *See col. 3, lines 38-45.* The output of the comparator 31 is provided to OR gates 33, 35, 37 and 39, and also clocks a toggle flip-flop 41. One output from the flip-flop 41 is connected to OR gates 33, 37, and the other output is connected to OR gates 35, 39. *See col. 2, lines 59-66.* When the waveform is negative or positive, a low or high pulse, respectively, is provided by the comparator 31 and causes the flip-flop 41 to provide the appropriate path through the transistors 3, 5, 7, 9 of the inverter 1. *See col. 3, line 48-col. 4, line 39.* In this manner, the circuit of Steigerwald reduces junction temperature and increases switching life of the inverter. *See col. 4, lines 40-50.*

Suelzle discloses an active filter for reducing non-fundamental currents and voltages. An AC power source 10 provides voltage  $V_s$  through internal impedance  $Z_s$  to AC power line 12. The voltage  $V_s$  has a fundamental frequency component and may include non-fundamental frequency components, such as harmonics or transient voltages. *See Fig. 1; col. 1, lines 7-12.*

According to MPEP §2143, to establish a *prima facie* case of obviousness, three criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. *In re Linter*, 458

F.2d 1013, 173 USPQ 560, 562 (CCPA 1972). Second, there must be a reasonable expectation of success. *In re Merck & Co., Inc.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Finally, the applied reference must teach or suggest all the claim limitations. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974).

Applicant respectfully submits that the Office action fails to establish a *prima facie* case of obviousness because the combination of Steigerwald and Suelzle does not disclose all the claim limitations, as recited in amended Claims 1, 6 and 11. Specifically, the claimed invention measures the harmonic currents of other loads connected locally to the same mains grid supply and uses that information to reduce the harmonic current content that would be otherwise be seen by the mains grid behind the meter *M* (utility owner side). This is achieved by the controller of the claimed invention that measures a harmonic current in the load current and generates an error signal based on a difference between the command output signal and the output current, wherein the controller is configured to process the error signal and to generate a switching signal for actuating a switching gate of the inverter to compensate for the load harmonic current when the inverter injects the output current to the mains grid supply voltage.

By contrast, Steigerwald is directed to a system that does not generate harmonic currents in the current it is injecting on the mains grid supply. There is no mention in Suelzle of a third circuit that for combining the load harmonic current and the fundamental sinusoidal current reference to generate a command output signal, wherein the controller is configured to generate an error signal based on a difference between the command output signal and the output current, and wherein the controller is configured to process the error signal and to generate a switching signal for actuating a switching gate of said inverter to compensate for the load harmonic current when said inverter injects the output current to the mains grid supply voltage. Thus, the combination of Steigerwald and Suelzle does not disclose, teach or suggest all the claim limitations, as recited in amended Claims 1, 6 and 11.

For at least this reason, Claims 1, 6 and 11 are allowable over the applied art, taken singly or in combination. Claim 2, which depends from Claim 1, Claim 7 which depends from Claim 6, and Claims 12-14, which depend from Claim 11, are likewise

allowable over the applied art, taken singly or in combination. Withdrawal of the rejection is respectfully requested.

2. The Office action rejects Claims 3, 4, 8 and 9 under 35 U.S.C. §103(a) over Steigerwald in view of Suelzle, and further in view of O'Sullivan et al. (U.S. Patent No. 5,929,538, hereinafter "O'Sullivan"). The rejection is respectfully traversed.

Claims 3 and 4 depend from Claim 1, and Claims 8 and 9 depend from Claim 6. As mention in Section 1 above, the combination of Steigerwald and Suelzle does not disclose, teach or suggest all the claim limitations as recited in amended Claims 1 and 6, namely at least the feature of a third circuit that for combining the load harmonic current and the fundamental sinusoidal current reference to generate a command output signal, wherein the controller is configured to generate an error signal based on a difference between the command output signal and the output current, and wherein the controller is configured to process the error signal and to generate a switching signal for actuating a switching gate of said inverter to compensate for the load harmonic current when said inverter injects the output current to the mains grid supply voltage.

O'Sullivan adds nothing to overcome this shortcoming in Steigerwald and Suelzle. Thus, the combination of Steigerwald, Suelzle and O'Sullivan does not disclose, teach or suggest all the claim limitations, as recited in amended Claims 1 and 6.

For at least this reason, Claims 3, 4, 8 and 9 are allowable over the applied art, taken singly or in combination. Withdrawal of the rejection is respectfully requested.

3. The Office action rejects Claims 5 and 10 under 35 U.S.C. §103(a) over Steigerwald in view of Suelzle, and further in view of Hopkins ("Partitioning Digitally Programmable Power-Control for Applications to Ballasts", hereinafter "Hopkins"). The rejection is respectfully traversed.

Claim 5 depends from Claim 1, and Claim 10 depends from Claim 6. As mention in Section 1 above, the combination of Steigerwald and Suelzle does not disclose, teach or suggest all the claim limitations as recited in amended Claims 1 and 6, namely at least the feature of a third circuit that for combining the load harmonic

current and the fundamental sinusoidal current reference to generate a command output signal, wherein the controller is configured to generate an error signal based on a difference between the command output signal and the output current, and wherein the controller is configured to process the error signal and to generate a switching signal for actuating a switching gate of said inverter to compensate for the load harmonic current when said inverter injects the output current to the mains grid supply voltage.

Hopkins adds nothing to overcome this shortcoming in Steigerwald and Suelzle. Thus, the combination of Steigerwald, Suelzle and Hopkins does not disclose, teach or suggest all the claim limitations, as recited in amended Claims 1 and 6.

For at least this reason, Claims 5 and 10 are allowable over the applied art, taken singly or in combination. Withdrawal of the rejection is respectfully requested.

### **3. Conclusion**

In view of the foregoing, it is respectfully submitted that the application is in condition for allowance. Favorable consideration and prompt allowance of the application is earnestly solicited.

Should Examiner Hall believe anything further would be desirable in order to place the application in better condition for allowance, the Examiner is invited to contact the undersigned attorney at the telephone number listed below.

It is believed that any additional fees due with respect to this paper have already been identified. However, if any additional fees are required in connection with the filing of this paper, permission is given to charge account number 07-0868 in the name of General Electric Company.

17 December 2007

Respectfully submitted,

/Peter J. Rashid/

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Peter J. Rashid  
Reg. No. 39,464

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Telephone: (810) 227-9077